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10/520,915	01/07/2005	Satoshi Mizutani	112857-491	5221
29175 7590 10/14/2008 BELI., BOYD & LLOYD, LLP P. O. BOX 1135 CHICAGO, IL 60690				
EXAMINER				
CHUO, TONY SHENG HSIANG				
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1795				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/520,915

**Applicant(s)**

MIZUTANI ET AL.

**Examiner**

Tony Chuo

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 41-80 is/are pending in the application.
- 4a) Of the above claim(s) 50-62 and 72-80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-49 and 63-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/08)  
Paper No(s)/Mail Date 8/18/05 5/1/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 41-49 and 63-71 in the reply filed on 9/12/08 is acknowledged. Claims 50-62 and 72-80 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected Groups II & III, there being no allowable generic or linking claim.

### ***Information Disclosure Statement***

2. The information disclosure statements (IDS) submitted on 8/18/05 and 5/1/08 were filed on 8/18/05 and 5/1/08. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

### ***Drawings***

3. The drawings filed on 1/7/05 are accepted by the examiner.

### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 63, 65, and 68 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7, and 8 of copending Application No. 11/267,641. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of claims 63, 65, and 68 is fully anticipated by the claims of copending Application No. 11/267,641.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 41-43, 46, 63-65, and 68 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3

and 9-11 of copending Application No. 12/026,594. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of claims 41-43, 46, 63-65, and 68 is fully anticipated by the claims of copending Application No. 12/026,594.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claims 41, 43, 49, 63, 65, and 71 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 7, and 8 of copending Application No. 11/268,010. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of claims 41, 43, 49, 63, 65, and 71 is fully anticipated by the claims of copending Application No. 11/268,010.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 63, 65, and 68 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4 and 7-10 of copending Application No. 11/267,116. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of claims 63, 65, and 68 is fully anticipated by the claims of copending Application No. 11/267,116.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claims 41-43, 46, 63-65, and 68 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 10-12 of copending Application No. 11/225,540. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter of claims 41-43, 46, 63-65, and 68 is fully anticipated by the claims of copending Application No. 11/225,540.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### ***Claim Rejections - 35 USC § 112***

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 46 and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what the ratio of carbon is relative to.

#### ***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 41, 47-49, 63, and 69-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazawa et al (US 6485864).

Regarding claims 41 and 63, the Miyazawa reference discloses a battery comprising: a positive electrode, a negative electrode, and an electrolyte, wherein the negative electrode contains a negative electrode material having a reaction phase containing boron (element capable of generating an intermetallic compound with lithium) and graphite, and wherein the negative electrode material provides a peak of carbon in a region around 282.5 eV by x-ray photoelectron spectroscopy (See column 10, lines 33-60).

Regarding claims 47 and 69, it also discloses a specific surface area of  $2.0 \text{ m}^2/\text{g}$  (See column 10, lines 57-58).

Regarding claims 48 and 70, it also discloses an average particle size of 10-25  $\mu\text{m}$  (See column 12, lines 23-26).

Regarding claims 49 and 71, it also discloses a crystallite size  $L_c$  of 41 nm (See Example 1).

15. Claims 41-43, 46-49, 63-65, and 68-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al (JP 2000-311681).

Regarding claims 41, 43, 63, and 65, the Kawakami reference discloses a battery comprising: a positive electrode, a negative electrode, and an electrolyte, wherein the negative electrode contains a negative electrode material having a reaction phase containing tin (element capable of generating an intermetallic compound with lithium), iron, and carbon (See paragraph [0050],[0099]).

Examiner's note: A peak of carbon that is obtained in a region lower than about 284.5 eV by x-ray photoelectron spectroscopy is an inherent property of the Kawakami negative electrode material because Kawakami discloses the same alloy that is capable of generating an intermetallic compound with lithium and is also formed by the same planet ball mill device.

Regarding claims 42 and 64, it also discloses a half value width of a diffraction peak obtained by x-ray diffraction of the reaction phase that is 1.3 degrees (See Table 11, sample no. 18).

Regarding claims 46 and 68, it also discloses a ratio of carbon that is 19.6 wt% as calculated from sample no. 18 in Table 11.

Regarding claims 47 and 69, it also discloses a specific surface area of  $5.0 \text{ m}^2/\text{g}$  (See paragraph [0047]).

Regarding claims 48, 49, 70 and 71, it also discloses an average particle size of  $10 \text{ }\mu\text{m}$  or less (See paragraph [0047]).

16. Claims 41, 42, 45, 46, 63, 64, 67, and 68 are rejected under 35 U.S.C. 102(b) as being anticipated by Kono et al (JP 2001-052691).

Regarding claims 41, 45, 63, and 67, the Kono reference discloses a battery comprising: a positive electrode, a negative electrode, and an electrolyte, wherein the negative electrode contains a negative electrode material having a reaction phase containing tin (element capable of generating an intermetallic compound with lithium), niobium, and carbon (See claims 1-4 and Table 1, sample no. 16).



Examiner's note: A peak of carbon that is obtained in a region lower than about 284.5 eV by x-ray photoelectron spectroscopy is an inherent property of the Kono negative electrode material because Kono discloses the same alloy that is capable of generating an intermetallic compound with lithium and is also formed by the same planet ball mill device.

Regarding claims 42 and 64, it also discloses a half value width of a diffraction peak obtained by x-ray diffraction of the reaction phase that is 27 degrees (See Table 1, sample no. 16).

Regarding claims 46 and 68, it also discloses a ratio of carbon that is 40 wt% as calculated from sample no. 16 in Table 1.

17. Claims 41-43, 46, 48, 49, 63-65, 68, 70, and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Dahn et al (WO 01/48840).

Regarding claims 41-43 and 63-65, the Dahn reference discloses a battery comprising: a positive electrode, a negative electrode, and an electrolyte, wherein the negative electrode contains a negative electrode material having a reaction phase containing tin (element capable of generating an intermetallic compound with lithium), manganese, and carbon (SnMn<sub>3</sub>C) (See Example 1).

Examiner's note: A peak of carbon that is obtained in a region lower than about 284.5 eV by x-ray photoelectron spectroscopy and the half width of a diffraction peak obtained by x-ray diffraction of the reaction phase that is about 0.5° or more are inherent properties of the Dahn negative electrode material because Dahn discloses the

same alloy that is capable of generating an intermetallic compound with lithium and is also formed by a similar ball mill device.

Regarding claims 46 and 68, it also discloses a ratio of carbon that is 4 wt% as calculated from Example 1.

Regarding claims 48 and 70, it also discloses a particle size that range from 2  $\mu\text{m}$  to 30  $\mu\text{m}$  (See claim 7)].

Regarding claims 49 and 71, it also discloses crystalline grains that are no greater than 20 nanometers (See claim 8).

### ***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 44, 45, 66, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al (JP 2000-311681). The Kawakami reference is applied to claims 41, 43, 63, and 65 for reasons stated above. In addition, Kawakami also discloses a negative electrode material that contains an alloy of tin, cobalt, carbon, and a fourth element (See Table 11, sample no. 20). It also discloses an element A that is a transition metal element selected from Cr, Mn, Fe, Co, Ni, Cu, Mo, Tc, Ru, Pd, Ag, Ir, Pt, Au, Ti, V, Y, Sc, Zr, Nb, Hf, Ta, and W (See paragraph [0033]). It also discloses

an element X of the alloy that is selected from O, F, N, Mg, Ba, Sr, Ca, La, Ce, Si, Ge, C, P, B, Bi, Sb, Al, In, S, Se, Te, and Zn (See Abstract).

However, Kawakami et al does expressly teach a reaction phase that contains tin and at least one selected from the group consisting of zinc, indium, and silver; or a reaction phase that contains at least one selected from the group consisting of elements from Group 4 to Group 6 of the periodic table.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to try to form an alloy from a finite number of identified elements that is used as an anode material with a reasonable expectation of success such as long cycle life, high capacity, and high energy density.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/  
Primary Examiner, Art Unit 1795